In The Matter Of:

Delaware Department of
Natural Resources - Public Hearing

RE: Diamond State Generation Partners, LLC.
March 06, 2012

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STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
and ENVIRONMENTAL CONTROL

COASTAL ZONE ACT PERMIT
PUBLIC HEARING

RE: DIAMOND STATE GENERATION PARTNERS, LLC

BEFORE:
ROBERT HAYNES, Hearing Officer

391 Lukens Drive
New Castle, Delaware

Tuesday, March 6, 2012
6:27 p.m.

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THE HEARING OFFICER: We'll start this public hearing, and this is the time and place for a public hearing on the application of Diamond State Generation Partners, LLC, for a permit under the Coastal Zone Act to conduct manufacturing at 1593 River Road, New Castle, Delaware.

My name is Robert Haynes. I've been assigned to preside over this hearing and to prepare a report of recommendations for review by the Secretary of the Department, Collin O'Mara, who will be making the final decision.

Couple of housekeeping matters. If you have not already done so, please put your electronic devices on silent. And if you do receive a cell phone call, please exit the hearing room before speaking. It's a matter of courtesy for everybody here, particularly the court reporter who will be taking down the public comments presented at this hearing.

Department representatives are here, at least there's one official from the Coastal Zone Act program, and some other ones that are here I know but may not be speaking.

Mr. Coyle, do you want to introduce yourself and any exhibits you want to admit into the record?

MR. COYLE: Yes. Thank you, Mr. Hearing Officer.

My name is Kevin Coyle. I'm a principal planner in the office of the Secretary at the Department of Natural Resources and Environmental Control.

I'd just like to remind everyone about the purpose of tonight's hearing. We are here to review the Diamond State Generation Partners, LLC's application for a Coastal Zone Act permit to install and operate 235 fuel cells that will utilize natural gas providing up to 47 megawatts of electrical power to the PJM electrical grid. We are here tonight to solicit public comment on the Diamond State Generation Partners, LLC, Coastal Zone Act permit application. And as the Hearing Officer just said, no decision on the Diamond State Generation Partners, LLC, application will be made tonight. The Secretary of DNREC will make a decision once the record has been closed and reviewed.

Just a word about offset proposal requirements which are a unique factor of the Coastal Zone Act. The regulations governing Delaware's Coastal Zone require an application for a Coastal Zone Act permit for any activity that could result in any negative environmental impact to the Coastal Zone. The regulations require all applications for a Coastal Zone permit to contain an offset proposal and those offset proposals must more than offset the negative environmental impacts associated with the proposed project or activity requiring a Coastal Zone permit.

I would now like to read into the record a list of exhibits.

Exhibit 1 is an application for a Coastal Zone Act permit dated November 11, 2011, and received on November 17, 2011.

Exhibit 2 is an affidavit of publication from the New Castle Weekly dated November 25, 2011.

Exhibit 3 is an affidavit of publication from the News Journal dated November 28th, 2011.

Exhibit 4 is an e-mail with an attachment from Jeffrey Bross, Duffield Associates, Incorporated, to Lee Ann Walling and Kevin Coyle from DNREC dated November 29, 2011, regarding PJM air emissions data.

Exhibit 5 is an e-mail with an attachment from Lee Ann walling to Kevin Coyle, dated January 3, 2012, regarding supplemental environmental offset information.

Exhibit 6 is an e-mail with an attachment from Lee Ann walling to Kevin Coyle dated January 18, 2012, regarding revised air emissions.

Exhibit 7 is an e-mail with an attachment from Lee Ann Walling to Kevin Coyle, dated January 20, 2012, regarding a second revision of air emissions.

Exhibit 8 is the Secretary's environmental assessment report dated January 2012 and signed on February 10, 2012.

Exhibit 9 is an affidavit of publication from the News Journal dated February 13, 2012.

And finally, Exhibit 10 is an

affidavit of publication from the New Castle Weekly dated February 16, 2012.

Now, that concludes my list of exhibits for the record, Mr. Hearing Officer.

THE HEARING OFFICER: These exhibits, I'll mark them as DNREC Exhibits 1 through 10 and they'll be admitted.

Basically the Department develops an administrative record to assist the public in making comments. Tonight the applicant has submitted the application, which the Secretary has determined is complete as indicated in the Secretary's environmental assessment report.

With that, I'll turn it over to the representatives of the applicant to make a presentation. And after that I will be taking public comments in the order that people signed in, to the extent you indicated that you wanted to speak. As time allows, we'll have a lot of people to speak who didn't sign up to speak. All right.

Are you ready?

MR. TUCKER: Thank you, Mr. Hearing Officer.

For the record, my name is Shawn Tucker. I represent Diamond State Generation Partners, LLC. Here with me is co-counsel this evening, Mr. Schoell, far end of the table to my right.

On behalf of Diamond State Generation company, to my immediate left is Bill Brockenborough. To his immediate left is Nick Ralston.

The environmental engineers that we've hired for this project are Jeff Bross from Duffield to my right and, to his right, Rick Beringer.

As a housekeeping matter -- and this may clear up some questions that the public may have on this issue, the relationship between Diamond State and Bloom is simply this: Bloom Energy owns the LLC known as Diamond State Generation Partners, LLC.

We have prepared a brief Power Point presentation to summarize what we think are the key components of our applications. Obviously the application is quite substantial, and we are happy to drill into specific questions that the

public or the Department or the Hearing Officer may have regarding the much larger application, but for convenience and for time purposes, we've prepared what we think are more key factors where there may be questions. And again, happy to go beyond this and much deeper as may be necessary this evening or this evening.

Going to slide 1, if I could, slide 1 represents an aerial of the site and the surrounding area. And just to help with this a little bit, you see the yellow triangle-shaped parcel? That is the parcel that's part of this application. It's where it lies in relationship to the Coastal Zone and the Delaware River, which is to the right.

In and around this site, in terms of resources, you have part of the flood plain. You have wetlands. In addition, you have some riparian buffer that's regulated by the county code, some young forests, and some mature forests.

The parcel itself is approximately 42 acres. The area that Diamond State will be developing on, which is being leased, is

approximately 12.44 acres. And of that leased area approximately 9.3 acres is existing farm land.

What I'm trying to point to -- I apologize. It's a little difficult to see in the Power Point -- is the Delmarva substation which is that whiter area that the arrow is pointing to. That will be the substation that will be connected to by Diamond State with the Bloom box that we are going to discuss in a few moments.

This slide represents the site plan that has been approved by New Castle County Department of Land Use, which gives you -- you can see the outline of the parcel, triangle, approximate triangle that shows the 42 acres and the lease line, the smaller component of that 42 acres, 12.44 acres. Approximately, again, 9.3 acres of that area is ag land that is being disturbed.

Wetlands make up -- you can see part of the wetland fingers coming in from right to left. The wetland area is about 5.79 acres. We are not disturbing that. The flood plain is about 4.71 acres. We are not disturbing that.

The riparian buffer is 8.77 acres. The young forest is 3.76 acres, and the mature forest is about 3.73 acres. We have some disturbance of the young forest and mature forest. There may be a small part of the riparian buffer that is being disturbed, but only as permitted by County Code. We did not need any variances or special exceptions. The plan that you see on the screen here was approved by the County without variance, without exception, and was code compliant.

In addition, there was a zoning certification obtained by New Castle County which is part of our application confirming that this is a permissible use at this location and rezoning is not required.

The I mentioned a couple of times that there is agriculture activity, farming on this site. The 9.34 acres that is being disturbed that is part of the ag use is being mitigated or offset, if you will. What we did was, in a letter dated December 28, from Duffield, we proposed as part of our application that we would -- I say we; I mean Diamond State -- offer $20,000 to offset the

displacement, if you will, of that ag land and that was based on an average per acre price within the Coastal Zone of approximately $2,118.

In terms of the use -- and I'm going to let Mr. Brockenborough from Diamond State explain how the Bloom boxes work because I'm sure that's what most people are interested in hearing tonight, how this technology works, how it's green, how it's more desirable than other types of energy production methods, particularly fossil fuel methods.

But before I get into that. Just quickly, as was already mentioned, there are 235 Bloom boxes when this project is complete, and that's going to be a two-phase project. The 235 are not going to be built initially but will come on line over time in two phases probably. The total megawatt output will be 47. Phase 1 will be approximately 27 megawatts, just to give you an idea of the phasing that we're anticipating at this stage.

So that's a quick sort of thumbnail sketch of the site plan, as well as sort of an overview of what's around us and our relationship

to the Delaware River and the Coastal Zone.

Now, with that, what I had like to do is turn over things to Mr. Brockenborough to talk a little bit about the Bloom Energy server or the Bloom box, if you will and also the technology.

MR. BROCKENBOROUGH: This is one of our energy servers. The capacity of this is 200 kilowatts. It's about 25 feet long by 8 feet wide by about 6 1/2 feet high. Quite compact, compared to other base load type power generation technologies, and also quite quiet. The only moving parts inside the fuel cell are fans for processed air.

The unit that you saw is actually six separate generation units of about 35 kilowatts each, and each of these generation units is a collection of fuel cell stacks. And in each fuel cell stack we produce electricity through an electrochemical reaction with no combustion. There's no flame inside the fuel cell. And in a very broad sense, the reaction is analogous to what you have in a lead acid battery where you can connect a load to a headlight and the battery quietly, through a chemical reaction, produces

the current that lights the light.

In the battery, water will form in the acid and lead oxide forms on the lead plates that needs to be regenerated. But you can imagine that, if you were somehow able to replenish the battery with its acid and its lead continuously, it would sit there and just continuously generate electricity. And that is what our fuel cell does. It does it through a chemical combination of hydrogen and carbon with oxygen, producing H2O and SO2 as the only principal emissions. And it does that without a flame.

This is a schematic of one scheme we are looking at. We, under certain circumstances, need to supply the fuel cells with water. The fuel cells reform the natural gas that's fed to them into carbon and hydrogen using steam. Ordinarily the fuel cell is using its own exhaust steam in the reformer. If the grid goes away and fuel cells are not at full power, they're only supplying their balance of the plant. They don't produce enough steam to operate, and so we need to supply the fuel cells with water. At this

installation that is going to be a very, very rare occurrence. That would be a regional blackout. We would be disconnected from the grid if there was some kind of grid event that took down transmission lines. So it would be expected very seldom, if ever, would we be operating in this mode, but when we do operate in this mode, we would use water which would then be deionized and fed to the fuel cell. From the deionization process, we have processed water, which essentially is the same water we draw from the well with all the minerals, the minerals that are taken from the DI water or the processed water, which we propose to return through a rapid infiltration basin.

An alternate process would be where we are able to get city water supplied to the site.

And alternatively, we could use a processed water storage tank to collect any processed water in the rare event where the fuel cells are operating but not connected to the grid.

MR. TUCKER: Regarding the PJM

region, I'd like to turn it over to Mr. Bross from Duffield Associates to describe this portion of the slide shoe.

MR. BROSS: Thank you, Shawn.

The offset, one of the offsets that we are proposing in this project is certainly an air quality offset because, in generating power using the Bloom technology and supplying that to the grid, we would be offsetting other more conventional forms of power generation principally within the PJM intersected grid.

This is a map showing the states that comprise that grid. And it's important because Mr. Beringer in a minute from our firm is going to walk you through the various fossil fuel generating capacity within the PJM grid, which, depending, again, on which portions of that fossil fuel generating capacity are running would be offset when the Bloom boxes come on line. And we've presented the offsets both in terms of an average offset for all the generating technologies within the PJM grid, and then we've also provided some demonstrated comparisons to show you the various forms of fossil fuel, if

they were to be offset individually, what the advantage by using the Bloom box generation capacity would be.

So, with that, I'm going to turn it over to Mr. Beringer from our firm to walk you through some of the air quality offsets.

MR. TUCKER: Rick, if you can just point out what the blue and the green is.

MR. BROSS: I'm sorry. The blue -- I'm sorry. The blue is the PJM region. All of those states or portions of those states have generating capacity that feeds into the PJM grid which, of course, Delaware is served by.

MR. BERINGER: This slide shows the location of coal-fired power plants in the PJM grid and some of our neighboring states. Not shown here are -- is New Jersey. We primarily showed what was in state and what was to the west of us.

But as you can see, there are a lot of coal plants in Pennsylvania and Ohio, West Virginia. There's four in Delaware currently. A lot in Ohio.

This is some modelling that was done

by the State of Delaware Department of Natural Resources. They did some air monitoring down at the Indian River power plant in Sussex county in the Coastal Zone. They were monitoring for a year at several stations. They took the highest particulate readings that they got, the days where they got the highest single readings, and then put those in a NOAA, National Oceanographic and Atmospheric administration, model which takes in the meteorological events from the dates preceding the date they got their reading and backtracks where the particulate matter came from that ended up at their monitoring station.

In this case, on December 7, 2008, they were able to track it back to a location in Ohio. On the 14th of December 2007, that reading was tracked back to a location in Ohio. On the 20th of December 2007, there was a trace back to upper Pennsylvania around Erie.

These are all the highest readings that they got. These are the four days that were the highest readings. Here's the third of February, 2008. This one tracks back to Ohio, West Virginia, or Kentucky border area.

Point to that is that our air comes from all over primarily from the west, and a lot of pollutants that we breathe in the Coastal Zone or anywhere in Delaware, for that matter, are coming from the west. They are not locally generated. And by having the Bloom box located here and generating electricity, we'll be essentially turning off some other generating facility in the PJM. Electrical demand is fixed at any moment in time. There's only so many electrons you can put through the grid because it's based on how many people are using it. So somebody will have to turn off and the -- within the grid, that will tend to be the fossil fuel-fired plants, your oil plants, your coal plants, your natural gas plants because they are costing utilities more money to operate. The wind farms that are in the area you can't shut down. They are generating power when the wind blows. The hydroplants, same thing. The nuclear plants more or less the same thing. They can scale back a little bit, but they are not going to turn off. The coal plants you can shut down. The peaker plants, which are typically oil-fired, you can

shut down. And that is, by having the Bloom boxes operate, that's what will happen.

This is a comparison of the Bloom box emissions for sulphur dioxide and nitrogen oxide, two average PJM emissions. So this -- the average PJM emissions are -- they include the coal, the oil, the gas, but they also include the power that's produced from nuclear which has no emissions of SOX and NOX. It also includes the wind power that is in the PJM grid. It also includes the hydropower that in the grid such as the Conowingo Dam. So it's a very good average.

And in that comparison, you can see that, by Bloom operating at 47 megawatts and turning off 47 megawatts somewhere else in the grid, you're getting almost 100 percent reduction in sulphur dioxides and nitrogen oxides.

This is -- we don't have average values for these parameters. PM is particulate matter, arsenic, beryllium, cadmium, cobalt, lead, manganese, mercury, nickel, and selenium are metals. The total PAHs are polynuclear aromatic hydrocarbons, and VOCs are volatile organic compounds.

We've shown -- tried to show in this illustration that, out of all these things, and they are -- they come out of the exhaust of burning fuels. Primarily coal is showing up there in the red. You don't see Bloom. Bloom doesn't emit any of the metals. It doesn't emit particulates. It doesn't emit PAHs. It does emit a few volatile organic compounds in the recombination of the natural gas or the -- that pass through with the natural gas, the contaminants in the gas itself. And those are things like butane, pentane that are there in trace amounts.

You know, the really nice thing is that we don't -- you're not getting these toxic metals that come out. You don't get the PAHs, you know, which are also being produced by diesel engines and cars. So it's -- you know, it's really a marvelous change for the better.

Come around to something like CO2, which has got a lot of people's attention now. It's not regulated, but here again, the Bloom cells, while they produce CO2, that's part of the chemical process of combining decomposing

methane, generating power. The output is CO2 and water. Compared to the other technologies that are around and the PJM average, it's much lower and will cause a reduction in CO2 production within the PJM region.

And this is a -- gives you a picture of how the -- what the Bloom servers look like in an application.

MR. BROSS: I guess maybe we could add to it that many of these applications, they are actually a corporate art form because they do have a very clean industrial look to them. This is a particular application in California, and if you're interested, certainly Mr. Brockenborough can speak to some of the other applications around the country.

So, with that, we are going to stop, Mr. Hearing Officer, and certainly allow you to entertain some other public comment and certainly address any questions you or others may have.

THE HEARING OFFICER: Thank you. This is the time for the public to make comments on the application. As part of the comment process you can ask questions of the applicant,

and also you can ask questions of Mr. Coyle. He can answer them. If the applicant or Mr. Coyle can't answer questions, we can defer and get a response back to the person who asked the question.

With that, John Nichols.

MR. NICHOLS: Thank you.

My name is John Nichols. I live in Middletown, Delaware. And I do have a few questions.

Representatives who are speaking on behalf of Bloom, or Bloom themselves, are they familiar with a report paper that was written by Robert Spitzga and submitted to the Delaware Public Service Commission at the Bloom hearings pertaining to the Bloom fuel cells versus natural gas fire cogeneration? Has anyone read that report?

All right. Let's talk about that in connection with your summary.

THE HEARING OFFICER: Who is going to be the primary person to respond to questions?

MR. TUCKER: Hearing Officer, I think it will depend on the answer. So let's --

THE HEARING OFFICER: Well, the court reporter has to know, so...

MR. TUCKER: I'll try to field it to the right person, if that will help, Hearing Officer, and I think the first question before we move on to what is being said next, why don't we answer that question. Has anybody from Bloom heard of that report that Mr. Nichols is referring to?

MR. BROSS: No.

MR. TUCKER: Do we have a copy?

MR. NICHOLS: I do. I'm going to make it part of the record this evening.

This report looks at the CO2 emissions and it does a comparison of CO2 emissions for base case. Base case in this example is in California, PG&E. They use cogen and they also look at the Bloom system plus a gas-fired boiler.

The author's contention here is that the Bloom system does not reduce CO2 because it ignores the need for thermal energy, meaning heating and cooling your building. In this analysis -- and I'll get to my question in just a

moment, but I have a bunch of them.

The CO2 emissions for the base case just for electricity -- and we are looking at 100 kilowatts in this example -- are 206 tons per year. But the boiler operation is 494.7 tons for total CO2 emissions of 701 tons. That is base case, no Bloom.

And we look at cogen where we have hot water and cooling provided on site along with electricity. Just to get to the bottom line, in that example, the total CO2 emissions are 678.85 tons per year.

Now, when we look at Bloom with the same 100 kilowatts of emission and we add the need for thermal energy, which your analysis this evening ignored as well, we find that there's a net increase in CO2 emission, which presents 799.4 tons per year of CO2. So the Bloom technology, when we account for the need for heating and cooling, does not reduce CO2 and it would appear -- and here's my question -- that your analysis this evening doesn't reflect that people need to cool and heat their buildings; you just account for electricity. If we are

accounting for the need for thermal energy, it seems that you dramatically overstated how much of an environmental benefit Bloom has to offer. But if you can comment to that question with respect to the need for thermal energy, and I'll include this as part of the public record. I'd like your comments on that this evening or at a later date.

MR. TUCKER: Hearing Officer, Shawn Tucker for the record. I'd like to respond part on legal grounds and then my client and Duffield Associates would like to address the question in terms of the technical question that's being asked.

As to the legal issue raised by the question, as was noted during our presentation, and as DNREC is aware, CO2s are not regulated as part of the Coastal Zone application. And so as a matter of whether this is relevant or not to the approval of this approval of the application, under the legal standard, it was not relevant, but it is certainly a fair question that Mr. Nichols asked and we are happy to respond to it.

Obviously, we've not had a chance to see the report, and so we're not -- we haven't had a chance to obviously have our expert analyze this report. Nevertheless, even if we did have the report, legally, it's ultimately not relevant to the approval or disapproval for what we are here for this evening, but again, a fair question by Mr. Nichols and I think Mr. Brockenborough would like to respond and Mr. Bross may have some follow-up comments.

MR. BROCKENBOROUGH: Certainly. It is certainly true where you have an application where you're able to use natural gas and obtain from that natural gas not only electricity but immediately usable heat, that is the most efficient use of that natural gas. That is certainly the case. Those applications are pretty limited. Certainly, the typical building, the one we are in, a house, most commercial facilities, don't have perfectly balanced electrical and thermal load, and where cogeneration can be applied, it can be applied to a portion of the electric load.

We are always going to need electric

only generation to supply electric demands. They're not tied to thermal demands. What our presentation addressed was the fact, with electric only generation, there are two points. First, within the PJM system, if we introduce our technology, it will offset megawatt for megawatt generation. That's the first point. And second point is we are much less carbon intensive than the average generation within PJM. So applying our technology will result in a net reduction of CO2 for the electricity consumed in the PJM area.

MR. NICHOLS: You've got --

MR. BROSS: I think Mr. Brockenborough said it well.

MR. NICHOLS: Okay. I'll accept that, but your report also looks at -- does not look at the need for the thermal energy to heat and cool buildings. It only looks at electrical output. So, in fairness, I think your report is incomplete. I think you need to include that in the report, in order to determine what kind of environmental offset you're providing. The need for thermal energy is totally ignored.

The other thing in your report that

you've done is you used average cost -- pardon me. You've used average electricity sources. In other words, we get approximately 50 percent of our electricity from coal, 30 percent from natural gas, 20 percent from nuclear. You've taken an average. What you should be doing is using a weighted average in order to determine what environmental benefits you are providing.

In that case, when you're looking at coal -- when you're looking at natural gas and nuclear, nuclear which is has no particulate emissions whatsoever, your environmental offsets are even more limited. So I think your report is incomplete and inadequate.

MR. TUCKER: Mr. Nichols, just a quick question for the record, are you referring to CO2 emissions?

MR. NICHOLS: No. I'm referring to the particulate emission, SOX and NOX. You have used an average of the energy that's available and you have not used a weighted average, which would be more appropriate. Therefore, I think you're overstating the so-called benefits associated with your technology. So I think it's

incomplete, and therefore, I request that another study be conducted reflecting the weighted averages need for thermal energy in that report which you ignored. Therefore, that might put us in another -- this might put us in another light. That's the first issue.

MR. TUCKER: Can we respond to that?

THE HEARING OFFICER: Are you finished?

MR. NICHOLS: I have no question, but I'm finish on that point.

THE COURT: Let's continue on with the comments.

MR. NICHOLS: I read your application last night, and I saw that you've indicated in the application for the Coastal Zone exemption that there is no -- I'm trying to remember the term. There is no technology associated with this that is now considered to be trade secret exemption. You've waived the trade secret exemption in your Coastal Zone application. That's my understanding. I read it last night, but you can confirm it.

Here's why I'm asking the question.

Are you familiar with a report that was done by National Energy Laboratories -- pardon me -- for the National Energy Laboratories concerning market impact of rare earth elements used in solid oxide fuel cells. Are you familiar with that report?

MR. TUCKER: Let's hear from the --

MR. NICHOLS: I will provide it.

MR. TUCKER: Hearing Officer, would you like us to respond to individual questions?

THE HEARING OFFICER: He did ask a question that time.

MR. NICHOLS: I'm ready to ask a question. I have to provide background.

THE HEARING OFFICER: Where are you going with this?

MR. NICHOLS: Thank you very much.

The back -- well, it's -- rare earth elements are used in all solid oxide fuel cells according to this study, specifically yttrium and cerium oxide and lanthanum. This is an OSHA report. I'm going to include this as part of the record.

OSHA lists yttrium as a hazardous

material. You've indicated, or the Secretary has indicated, that there are no hazardous -- there are no hazardous wastes generated. I guess we can argue about what it means, generated, but if, in fact, Bloom technology does use yttrium, then that report says that's a hazardous material, which you are injecting into a Coastal Zone environment.

I'm concerned about that. I don't see anything dealing with that. What if there was a catastrophe? I know you've got a ten-foot fence around the place. But what if there was a terrorist event? What if it blew up? I know you've got containment measures, but they had containment measures in the Gulf and we had a big problem.

So my question is, what are you doing to assure us that this hazardous material won't be spread into a sensitive wetland environment. That's another question. If anything. I saw nothing in the report that covered that issue, and in fact, there's denial that any hazardous waste exists. But OSHA specifically notes yttrium is a hazardous product.

And I also have information regarding cerium dioxide. This is not from OSHA. This is from Acros Organics. I'll provide this for the records. Fair Lawn, New Jersey. Which is most likely -- according to the report, it's known to cause eye, skin, and respiratory irritation. None of this has been addressed.

I also have another report on cerium oxide dealing with inflammation of vascular endothelial cells, pertaining to cerium oxide.

Again, no mention of this. In fact, it's specifically indicated there is no hazardous material generated. And that would seem to be in error. So I'll include the market impacts in that.

What are you going to do about that, if anything? Will you acknowledge that there are, in fact, hazardous materials in your Bloom fuel cells?

THE HEARING OFFICER: If you can respond to that now, give it the best shot. Otherwise you can provide a written response later.

MR. BROCKENBOROUGH: Yeah. We're not

able to discuss the specific chemical composition of our fuel cells.

MR. NICHOLS: Therefore, I would ask that this application be rejected because they specifically waived any trade secret exemptions in their application. Absent that information, this must not be approved.

What else can I talk to you about this evening?

THE HEARING OFFICER: Let me just mark this --

MR. NICHOLS: Pardon me?

THE COURT: Mark this as Nichols Exhibit 1, which is the discussion paper. Do you have any other exhibits?

We'll mark the Power Point presentation of Diamond State Generating Exhibit 1.

MR. NICHOLS: The last question pertains to $20,000. This is nine acres of prime agricultural land that is not going to be used in an agriculture setting any more. It's going to be used in an industrial application. According to some studies over market cost of the

electricity --

THE HEARING OFFICER: Sir, I need to mark exhibits here. I'll provide them to the applicant.

"Market Impacts of Rare Earth Elements Used in Solid Oxide Fuel Cells" will be Nichols Exhibit 2. You can look at them now if you want to.

Also the Department's exhibits are available for public inspection.

Nichols Exhibit 3 is the research article, Inhalation Toxicology, 2009. Articles on inflammation and vascular -- I can't pronounce that one. We'll mark that as Exhibit 3.

MR. BROSS: Mr. Hearing Officer, Jeff Bross. If I might interrupt, here is a formal submission of our presentation tonight. I'm not quite sure where this one came from, but this is the one that should go into the record.

THE HEARING OFFICER: I trust my source. Mr. Coyle. Is it the same one?

MR. COYLE: Mm-hmm.

THE HEARING OFFICER: I think it is.

Next is a material safety data sheet

for cerium oxide, Nichols 4.

And the last one, Nichols 5, last one for now, is the OSHA report guidance document.

You're welcome to look at those.

Mr. Nichols.

MR. NICHOLS: The $20,000. Since we are talking about an industrial application versus an agricultural purpose, it seems to me that the amount of money that you're offering as a sum to mitigate against any environmental hazards is way too low. Highest and best use is what we should be using. You're not. I'd like to know why you're not and why it is $20,000 is adequate compensation given the environmental hazard that this technology offers. I suppose you don't have an answer for that, but that's --

MR. TUCKER: Excuse me, Hearing Officer. Sarcasm is really unnecessary.

MR. NICHOLS: I apologize.

MR. TUCKER: Nor is the dramatic --

MR. NICHOLS: I apologize. I apologize.

THE HEARING OFFICER: First rule. Don't talk over or interrupt anybody. The court

reporter can only take down one person at a time.

MR. NICHOLS: Mm-hmm.

THE HEARING OFFICER: Basically, I give certain latitude on public comments, but --

MR. NICHOLS: Thank you.

THE HEARING OFFICER: But I think the real question is the Department also approved that 20,000 because that was the Secretary's assessment. He approved the offset. So, to the extent that that's an issue, if you would like to put into the record what you think would be an appropriate offset, then the Secretary will take that into consideration.

MR. NICHOLS: Sure. My recommendation is highest and best use. Thank you.

And the last question, the Secretary is again promoting sea level rise throughout Delaware, saying that we are going to experience five feet sea level rise and there are inundation maps that have been prepared showing what areas of the state are going to be affected. Does this area exist within those -- within the inundation map as provided by the Coastal Zone? If it is,

probably shouldn't be there.

MR. BROSS: Mr. Hearing Officer, Jeff Bross. If I might address Mr. Nichols, at least the last two questions that he asked --

MR. TUCKER: If we can just confirm that those are all the questions, Hearing Officer.

MR. NICHOLS: That's it.

MR. TUCKER: Thank you.

MR. BROSS: First of all, on the issue of sea level rise, the numbers that have been bandied about for sea level rise, I think, are overstated by Mr. Nichols. But assuming that it's in the three- to five-foot range, this site would not be impacted by sea level rise of that magnitude.

To address the farm land preservation offset, I don't know, Mr. Nichols, if you're familiar with the December 28, 2011, letter that we sent, and I presume, then, you're taking issue with that. But clearly I think the record shows and the Department has accepted that we based the value of farm land on the most recent farm land preservation purchase within the Coastal Zone and

that was the amount of $2,118.07 an acre, which is a fairly generous as farm land preservation numbers go amount times the acreage that we are impacting. It actually comes to slightly less than $20,000. It comes to $19,700 in round numbers, and therefore Bloom offered a $20,000 payment, which was deemed acceptable by the Department.

MR. TUCKER: And lastly, Mr. Hearing Officer, Mr. Brockenborough, I think, would like to briefly respond to the metals that are used in Bloom boxes.

MR. NICHOLS: Excuse me. May I correct your statement? I didn't ask metals. I asked elements.

THE HEARING OFFICER: No. You do not have --

MR. NICHOLS: He's contradicting me.

MR. TUCKER: Thank you, Mr. Chairman.

THE HEARING OFFICER: Again, they have the floor. They've got the floor. Don't interrupt.

MR. BROCKENBOROUGH: There were a couple of questions, one about average figures

for particulates. We used average figures for PJM emissions where they were available. They were average figures for NOX and SOX and CO2, but not for particulates.

On the issue of rare earths, again, I can't discuss the specific chemical composition of the ceramic inside the fuel cell, but I can state that there are no emissions or discharges of any such material in the operation of the fuel cell.

THE HEARING OFFICER: All right. Thank you for that. And thank you, Mr. Nichols, for your comments.

Elizabeth Brown.

MS. BROWN: Hi. Good evening. My name is Elizabeth Brown. I'm director of Strategic Initiative and I'm counsel with Delaware Riverkeeper Network.

We were established in 1988 upon the appointment of the Delaware Riverkeeper, and we are a non-profit 501(c)(3) membership organization. Our professional staff of volunteers work throughout the entire Delaware River watershed, including portions of Delaware,

Pennsylvania, New Jersey, and New York. The Delaware Riverkeeper Network champions the rights of our communities to the Delaware River and tributary streams that are free-flowing, clean, and healthy.

While we do not support or oppose a particular project at this point in time, the Delaware Riverkeeper Network is keenly concerned about natural gas development within the watershed. The shale gas play is undoubtedly a game changer, and while many tout the fuel as clean burning and a bridge to renewables, those labels belie its extreme toll on the environment levied by extraction and transportation of gas to the market. And the proposal currently before DNREC appears to provide such a market for this extreme fossil fuel.

Delaware Riverkeeper Network's conceptual concern is that the development of this project will lead to further industrialization and investments for yet another fossil fuel infrastructure. Regulation 6.3.1 requires the Department to consider the environmental impact in considering applications.

More specifically, regulation 8.3.3 requires the Secretary to consider any impact the proposed activity may have on the Department's environmental goals for the Coastal Zone and the environmental indicators used to assess long-term environmental quality within the zone.

And regulation 6.3.4 requires DNREC to consider the number and type of supporting facilities required and the impact of such facilities on all factors listed in the subsection.

It seems that the application may not go far enough in discussing how the project meshes with the Department's environmental goals, nor does the application seem to satisfy the requirement to address long-term environmental quality, and importantly, the gas-related infrastructure such as additional pipelines and energy-related facilities and other requirements that may truly be necessary to get the project up and running and keep it running into the future.

Regulations also require applications to contain an offset proposal, action that more than offset the environmental impacts associated

with the project requiring a Coastal Zone permit. The true cost of this project should address the environmental impact of the source fuel, natural gas, taking all the environmental costs and disadvantages into consideration. Delaware Riverkeeper Network believes that the offset proposals are insufficiently specific or adequate in this case.

The application indicates that cooling water is required only intermittently and estimates that a few thousand gallons for a handful of dates per year would be used and would be drawn from ground water. The water would be discharged back to ground with some total dissolved solids being discharged. It seems that this environmental detriment should also be addressed through offsets.

Finally, the proposed lump sum payment for land use changes, I believe -- I'm actually going to go over that part of my comment. I believe that was addressed in your response to the prior gentleman's comments.

Regulation 8.2.10 requires that raw materials, intermediate products, byproducts, and

final products and their characteristics from MSDSs, if available, et cetera, be included in an application.

And finally, the level of detail in the application raises some concerns for Delaware Riverkeeper Network. The application does not seem to adequately identify the source or sources of natural gas that would be used for the facility.

So my first question, if I could pose it directly to the panel would be, what is the proposed source? And the second question related to this is does the infrastructure currently exist to connect in as it were.

MR. BROCKENBOROUGH: Certainly. The source of the natural gas is going to be Delmarva, and we are going to get the natural gas from a distribution line that's on River Road.

I'd like to address your comment about concerns about the impact of shale gas.

THE HEARING OFFICER: She just wanted the one question. I mean, you'll have -- let her continue with this.

MR. BROCKENBOROUGH: All right.

MS. BROWN: That's fine. My next question is, what are the current life cycle estimates of the facility and what is the capacity and/or possibility for expansion into the future?

MR. BROCKENBOROUGH: We don't envision any expansion beyond the 47 megawatts for which we are applying right now, and the life cycle of the project is approximately 22 years.

MS. BROWN: My next question concerns the TDS. The current estimate of generation of TDS in water, is this a best case/worst case scenario? Do you have any more detail that you can provide on that?

MR. BROSS: If I might address that -- Jeff Bross, Mr. Hearing Officer -- the total dissolved solids you're referring to, I presume, is in the discharge waters. We think it is a conservative estimate, and I would say, in response to an earlier comment you made, that the water that would be recharged under the one option, which uses well water, actually is putting drinking water quality water back into the ground. So I think any characterization to

the contrary is hyped and misrepresented. So that was in our application and hopefully you saw it in there, so...

MS. BROWN: To what extent will repair or maintenance of the cells take place on site and are there any plans to change or adapt that in the future?

MR. BROCKENBOROUGH: The site plan includes a small facility for the storage of spare parts and some maintenance of the fuel cell. Balance of the plant will be performed on site. Balance of plant will be filters, blowers, and so forth.

MS. BROWN: That was my final question. Thank you so much.

THE HEARING OFFICER: Thank you.

Next person that signed up to speak was Brenna Goggin.

MS. GOGGIN: Good evening. My name is Brenna Goggin. I'm representing the Delaware Nature Society this evening.

The Delaware Nature Society is a private, nonprofit membership organization with more than 6,000 members statewide that work to

foster understanding, appreciation, and enjoyment of the natural world through education, advocacy, and preservation.

We have been a strong supporter of the Delaware Coastal Zone Act since its inception and have reviewed and provided comments on numerous Coastal Zone applications. While we are not prepared to support or oppose the project this evening, we do have several concerns regarding Bloom Energy's proposed offset.

From what I was hearing through the presentation and my understanding of what I have read, Bloom Energy is proposing that, by coming on line, they should be considered an offset themselves. Bloom would be a great offset for a coal-fired power plant, but it cannot be considered an offset by itself. For example, there was a previous application that proposed a concrete recycling facility. They also had offsets for their impact themselves, not the offset of what a concrete facility would then require to have an offset within a 200-mile radius.

The Coastal Zone regulations are

designed to promote improvement of the environment within the Coastal Zone. Bloom has not shown how their proposed offset will accomplish this. It is unclear how emission reductions within the PJM grid are clearly and demonstrably more beneficial to the environment in the Delaware Coastal Zone as required by the regulations. The locations of the referenced power plants within the PJM grid are not specified, although that was addressed this evening in the presentation. But it is unlikely that changes in their operation resulting directly from start-up of the applicant's facility will result in clear and demonstrable improvement in air quality in Delaware's Coastal Zone. We believe DNREC should require a revised offset proposal.

Thank you for the opportunity to comment.

THE HEARING OFFICER: Thank you.

Do you want to submit your written comments as exhibits? That can be done too. You already did?

MS. GOGGIN: Mm-hmm.

THE HEARING OFFICER: All right. Would you hand it to me?

MR. TUCKER: Mr. Hearing Officer, just briefly for the record, there are some timing issues that we are concerned about, so we would like to try to respond as best we can to some of these comments.

Legally I would respectfully submit that the proposed new technology itself can be an offset. There's nothing that I read in the Act that prohibits that. And we would submit that any green technology, the fact that it's green technology itself, can be considered in the offset. There's certainly nothing that prohibits that as I read the act.

Regarding how the actual offset works, I will defer briefly to Mr. Bross on that point.

MR. BROSS: Thank you, Mr. Tucker.

We think we have shown clearly and compellingly and conservatively the fact that the Bloom technology does provide an offset in the PJM scenarios we presented using offsetting the average of all generation within PJM. We could

have easily gone, and in fact, did go, to a coal plant and the offsets are almost 100 percent. But we thought it was only fair and conservative to offset the average of all PJM generating capacities and technologies. And in fact, we have still shown a considerable improvement.

So I'm struggling a little bit with the comments from the DNS. It appears they haven't thoroughly read the application and certainly don't understand the analysis that was done. Clearly the Department of Natural Resources who has experts, a wide array of experts in the air quality field, have accepted our proposal and certainly, we feel, correctly so.

So those would be my comments.

MR. TUCKER: Thank you.

All right. That completes the public comments from anybody who indicated they wanted to speak. Is there anybody that did not sign up to speak who would like to speak. And, Mr. Nichols, I think you indicated --

MR. HAHN: I signed up to speak.

THE HEARING OFFICER: I am sorry.

You did. I totally -- Mr. Hahn.

MR. HAHN: I just have a couple questions, I guess, comments. One, in siting the facility, I wonder if there was any effort to use some already industrial land and brown field sites. I think that's a prudent Coastal Zone policy. For instance, the MediChem site across the street or across the Red Lion Creek is a site that's considered a brown field that, you know, wouldn't require taking additional farm land, so to speak, and may put back into productive use an already impacted site.

Related to that, with the ground water, I know there was a comment about alternative sources. I'm wondering, with the well, with the ground water contamination from the MediChem site, whether there would be any issues. I don't know that answer. But I understand there is contamination in the Potomac aquifer, and what that would do -- whether that would impact the groundwater remediation strategy at MediChem and/or the quality of ground water.

In terms of storm water, I did see there was a note that, because the property is

agricultural, that current levels of pesticides, herbicides, and fertilizers used would no longer be discharged to the storm water -- to the river or to the Coastal Zone. I wonder if there's any data available about that or whether those things actually are discharged in storm water or infiltrated. A lot of pesticides, herbicides, the particular breakdown may not be discharged. There may maybe some fertilizers. But also, whether there would be some type of commitment or -- you know, if there would be some kind of policy at the new facility not to use pesticides because, you know, you could use pesticides or herbicides as part of the management of that facility as well.

The other thing that's been mentioned a couple of times is that the $20,000 -- I think, you know, in the Coastal Zone in particular in this area, protection of marshlands, restoration of marshlands is required. There was a report from DNREC last week about the loss of wetlands despite, you know, regulatory actions and policies. There's still been significant loss of wetlands. So I think, focussing on wetlands,

particularly tidal marshes and marshlands, which would be the focus of this $20,000, is a good measure. $20,000, however, isn't going to go very far in marsh restoration. And I think, you know, one of the ways for dealing with marsh restoration or marsh preservation is in -- and sea level rise is allowing for retreat, if you will, and these farmlands and upland areas, you know, are going to be important in that. So I understand, I guess, how the $20,000 was arrived at, but I think the value of that land relative to protection of marshes and protection of the Coastal Zone could be significantly higher using some other valuation techniques.

And again, I just commented, the $20,000 isn't really going to get you very far at all. There's some funds -- there are some studies available what per acre -- you know, for instance, what marshland restoration cost in Delaware, and I don't know if there's a particular marsh project that says it would help restore marshland in the vicinity of the project. So I'm not sure what particular marsh area may be targeted, but a lot of marshes in this area have

been impacted from dredging and filling and diking, those type of things, and then across the Red Lion Creek, actually even contamination. So it's pretty challenging but a worthy focus of an offset, but I don't think the $20,000 is going to get you too far.

THE HEARING OFFICER: Are you done? Thank you very much.

Mr. Nichols, any more comments?

MR. NICHOLS: I do have a comment.

THE HEARING OFFICER: Nobody else wanted to --

MR. BROSS: Mr. Hearing Officer, would you like us to respond to those questions first before we go to Mr. Nichols while they're fresh in our mind?

THE HEARING OFFICER: I didn't really hear specific questions unless I missed that. Again, I apologize. I thought there's more just comments.

MR. HAHN: I think I had one question.

THE HEARING OFFICER: You're entitled to provide a written response.

MR. HAHN: I may have had one question, mostly comments. And that was whether any alternative sites maybe in the area were looked at like a brown field site versus farmland.

MR. TUCKER: Shawn Tucker for the record.

The site locations were driven by the proximity to existing Delmarva power substations. And this site and the Brookside site, which is not the subject of tonight's hearing, but the two sites that are being proposed for development with Bloom boxes are both adjacent or contiguous to existing substations. That was the driving factor.

Thank you.

MR. HAHN: Does that mean that industrial sites weren't looked at?

MR. TUCKER: Only sites that were next to existing substations, and these were the two that were focussed on.

MR. HAHN: Maybe just a quick --

THE HEARING OFFICER: That can be your comment. You can ask the Department to

consider that, but that's...

MR. HAHN: Well, just a quick follow-up, how far away can you be?

MR. BROSS: Hypothetically you can be very far, but the further you go away, then the additional easements and right-of-ways and power lines you have to run through the Coastal Zone.

MR. BERINGER: More inefficiency.

THE HEARING OFFICER: All right. Are we done?

MR. BROSS: For the record, there were a couple of questions asked and comments made. And they were good comments, by the way.

Storm water management on the site is going to use green technology. It's shown in the plans. We expect a significant improvement in the storm water quality running into adjacent wetlands as a result. There have been numerous studies that show the impacts of farmland, including pesticides, herbicides, sediment loss, all of which go away with this proposal. And so that's significant.

Your comment about contamination of ground water, it's our opinion that ground water

at this site is not contaminated. Certainly you made some reference to the MediChem site. And you know, there is some contamination in the area, but not related to this particular site. And we don't think that -- as a matter of fact, we are of the opinion we will not exacerbate those problems as a result.

The -- I think you had one other comment. Oh, the brown fields comment. Again, you heard the answer to that. We need proximity to the substation. And I guess I would certainly observe that the reason we are here is because the, if you will, the generation of energy has been ruled by the Department to be a manufacturing use. It's, in our opinion, it's a bit of a stretch, but it's their determination and we are respecting that and that's why we are here.

THE HEARING OFFICER: Mr. Nichols.

MR. NICHOLS: I just wanted to also mention for the record that attachment F, which deals with the environmental assessments, a letter from the State of Delaware Natural Heritage Program, which is required as part of

the approval process, was not included at this hearing. It says, "To follow."

Again, I feel that this application is incomplete and should be rejected.

Thank you very much.

THE HEARING OFFICER: I think that -- Mr. Coyle, do we include that in the exhibits? I thought I saw that. The Natural Heritage letter.

MR. NICHOLS: Include this as an exhibit, please.

MR. TUCKER: Mr. Hearing Officer, we may be able to respond.

MR. BROSS: Mr. Hearing Officer, that letter was furnished to the Department. So we presume that they took that into account in making their decisions.

THE HEARING OFFICER: A decision has been made. It's not part of the application process because the Department prepares that. So the applicant is off the hook on that.

MR. NICHOLS: It says it was supposed to be part of the process. Not included.

THE HEARING OFFICER: Well...

MR. NICHOLS: It seems that that

ought to be available.

THE HEARING OFFICER: Mr. Coyle, do you have an answer for that.

MR. COYLE: I do not.

THE HEARING OFFICER: With that, we'll conclude the public hearing.

Does anybody want to keep the record open for additional information? The Department reserves the right to supplement the record as needed by the Secretary to make his decision or as I may need information.

Hearing nothing --

MR. NICHOLS: I would like to be able to provide additional information.

THE HEARING OFFICER: When are you going to provide that?

MR. NICHOLS: Tomorrow.

THE HEARING OFFICER: Okay. You'll have to the close of business on March 7, then, to send it to Mr. Coyle. Do you have his e-mail address?

MR. NICHOLS: I'll get that.

THE HEARING OFFICER: That will be great. We will get it to the applicant.

Again, the Department reserves the right to develop the record to support the Secretary's decision with such information as may be required.

Delaware Nature Society written document, I don't know if I identified them. We'll mark them as DNS Exhibit 1.

Thank you all for coming.

MR. TUCKER: Thank you, Mr. Haynes.

(Which was all the proceedings had on hearing of said cause on the date aforesaid.)

INDEX TO EXHIBITS

State of Delaware)
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County of New Castle)

C E R T I F I C A T E

I, Ann M. Calligan, Registered Merit Reporter and Notary Public, do hereby certify that the foregoing record, pages 1 to 60, inclusive, is a true and accurate transcript of my stenographic notes taken on March 6, 2012, in the above-captioned matter.

IN WITNESS WHEREOF, I have hereunto set my hand and seal this 12th day of March, 2012, at Wilmington.

Ann M. Calligan, RMR

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